Author Disclosures: C.D. Owens, None; **J. Kim,** None; **N.D. Hevelone,** None; **A.D. Hamdan,** None; **J.D. raffetto,** None; **M.A. Creager,** None; **M.S. Conte,** None.

SS6.

Preoperative Functional Status Predicts Poor Perioperative Outcomes After Infrainguinal Bypass Surgery: an NSQIP Report

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Objective: Infrainguinal surgical bypass (BPG) is the gold-standard for lower extremity revascularization despite significant 30-day morbidity and mortality (MM). The goal of this study is to determine the ability of pre-operative functional status to predict perioperative MM and thus identify patients who may be unsuitable for BPG.

Methods: All BPG data between 1/1/05-12/31/07 from the prospective NSQIP database was analyzed. The study end-point was 30-day MM. Patients were stratified by preoperative functional status: independent (IND) vs. dependent (DEP), defined as requiring assistance in performing activities of daily living. Associated patient demographic/clinical data were analyzed using univariate and multivariate methods with the construction of high risk composites.

Results: There were 5639 BPG patients (4600 (81.6%) IND and 1039 (18.4%) DEP). DEP patients were significantly older (71.6 ± 11.8 vs. 66.8 ± 11.8 years; $p<0.0001$), had more COPD (16.7 vs. 11.4%; $p<0.0001$), diabetes (54.2 vs. 40.7%; $p<0.0001$), current dialysis (16.4 vs. 5.6%; $p<0.0001$), and critical limb ischemia (64.6 vs. 44%; $p<0.0001$). DEP patients had a higher incidence of death (6.1 vs. 1.5%; $p<0.0001$) and major complications (30.3 vs. 14.2%; $p<0.0001$). DEP was a multivariate independent predictor of death (2.3[1.6-3.4]; p<0.0001), major complications (2.0[1.7-2.4]; p<0.0001) major systemic complications (2.5[1.9-3.2]; p<0.0001) and major operative site complications (1.6 [1.4-1.9]; $p<0.0001$). When combined with DEP, there were multiple variables that contributed to high-risk composites, e.g., the successive addition of + hemodyalisis, + emergency surgery and + age ≥ 80 years increased the death rate 13-, 38- and 97-times respectively. For major complications, the successive addition of + emergency surgery, + Cr>1.8 and + rest pain increased the risk 5-, 7- and 11-times that of baseline.

Conclusion: Pre-operative DEP is a significant surrogate for comorbidities in addition to being an independent predictor of all major negative 30-day outcomes in BPG patients. Furthermore, when combined in high-risk composites with specific preoperative clinical variables, DEP is associated with prohibitive MM, thereby identifying patient cohorts that can be considered unsuitable for BPG.

Author Disclosures: R.S. Crawford, None; **C.J. Abularrage,** None; **M.F. Conrad,** None; **T.R. Lancaster,** None; **M.T. Watkins,** None; **R.P. Cambria,** None; **G.M. LaMuraglia,** None

Resident Research Prize Paper

SS7.

Antioxidant Therapy Reverses Impaired Graft Healing in Hypercholesterolemic Rabbits

Michael A Rosenbaum, Keiko Miyazaki, Scott M Colles, Linda M Graham. Cleveland Clinic Foundation, Cleveland, OH

Objective: Limited endothelial cell coverage and anastomotic intimal hyperplasia contribute to thrombosis and failure of prosthetic grafts. Lipid accumulation and lipid oxidation are associated with decreased endothelial cell migration and intimal hyperplasia. The goal of this study was to assess the ability of antioxidants to improve graft healing under hypercholesterolemic conditions.

Methods: Rabbits were placed on one of four diets: chow plus N-acetylcysteine, chow plus probucol, chow with 1% cholesterol plus N-acetylcysteine, or chow with 1% cholesterol plus probucol. After two weeks, 12 cm long, 4 mm internal diameter expanded polytetrafluoroethylene grafts were implanted in the abdominal aorta. Six weeks after implantation, the grafts were removed and analyzed for cholesterol content, endothelial cell coverage, anastomotic intimal thickness, and the cellular composition of the neointima. Plasma samples were obtained to assess systemic oxidative stress levels. The data was compared with previously reported data from animals on a chow and chow plus 1% cholesterol diet.

Results: Prosthetic grafts from rabbits on a 1% cholesterol diet had significantly greater anastomotic intimal thickening and lower endothelial cell coverage than grafts from rabbits on a chow diet. Antioxidant therapy decreased global oxidative stress in hypercholesterolemic rabbits. In rabbits on the 1% cholesterol diet, N-acetylcysteine decreased intimal hyperplasia atthe proximal anastomosis by 29% and significantly increased graft endothelial cell coverage from 46% to 71% (P = .03). Similarly, probucol decreased intimal hyperplasia by 43% and increased graft endothelial cell coverage to 53% in hypercholesterolemic rabbits.

Conclusions: Endothelialization of prosthetic grafts is significantly reduced and anastomotic intimal hyperplasia is significantly increased in rabbits on a high cholesterol diet. Treatment with antioxidants improves endothelial cell coverage and decreases intimal hyperplasia. Reducing oxidative stress may promote patency of prosthetic grafts.

Author Disclosures: M.A. Rosenbaum, None; **K. Miyazaki,** None; **S.M. Colles,** None; **L.M. Graham,** None.

S2: SVS Plenary Session

SS8.

Renal Parenchymal Preservation After Percutaneous Renal Angioplasty And Stenting.

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Objective: The intent of endovascular therapy for symptomatic atherosclerotic renal artery stenosis (ARAS) is to preserve parenchyma and avoid renal-related morbidity.

Methods: We performed a retrospective analysis of records from patients who underwent endovascular intervention for ARAS and were followed by duplex ultrasound between 1990 and 2008. Renal volume (in cm^3) was estimated in all patients as renal length (cm) x renal width (cm) x renal depth (cm)x0.5. The normal renal volume was calculated as 2 x body weight (kg) in cm^3. Failure of preservation was considered to be a persistent 5% decrease in volume. Clinical benefit defined as freedom from renal-related morbidity (increase in persistent creatinine >20% of baseline, progression to hemodialysis, death from renal-related causes) was calculated.

Results: 592 renal artery interventions were performed. 188 kidneys suffered parenchymal loss (>5%) with an actuarial parenchymal loss rate of 29±1% at 5 years respectively. There were no significant differences in age, gender, starting renal volume or kidney size (Table 1). However, patients with parenchymal loss had lower eGFR, higher resistive index and worse glomerulosclerosis grade then those not suffering parenchymal loss (Table 1). Parenchymal loss was associated with significantly worse survival and freedom from renal-related morbidity with increased numbers progressing to dialysis.

Table 1

	No parenchymal loss	*Parenchymal loss*	*p-value*
Gender (% female)	55	49	ns
Age (years) *	70 ± 11	71±9	ns
eGFR (ml/min/1.73m2)	53±24	45±24	0.05
Starting Renal Volume (% of normal) *	90±19	90±17	ns
Renal size (cm)*	10.2±1.4	10.3±1.2	ns
Resistive Index (RI)*	0.73±0.10	0.87±0.9	0.05
Glomerulosclerosis Grade (GSG)	1.30±0.49	1.43±0.55	0.05
Survival (%)†	88±2	26±4	0.001
Freedom from renal-related morbidity (%) †	82±2	70±5	0.05
New onset Hemodialysis (%)	7	17	0.05

*Mean±SD.

†Mean±SEM at five years follow up.

Conclusion: Parenchymal loss occurs in 31% of patients and is associated with markers of impaired parenchymal perfusion (RI and GSG) at the time of intervention. Pre-existing renal size or volumes were not predictive of parenchymal loss. Parenchymal loss is associated with a significant decrease in survival and a marked increased renal related morbidity and progression to hemodialysis. Monitoring parenchymal loss will identify high-risk patients after renal intervention.

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SS9.

Successful Management of Acute Complicated Type B Dissections with TEVAR and Adjunctive Endovascular Techniques: Malperfusion Versus Rupture

Elena Y. Rakhlin, Wilson Y. Szeto, Ronald M. Fairman, Benjamin M. Jackson, G. William Moser, Edward Y. Woo. Hospital of University of Pennsylvania, Philadelphia, PA

Objective: Complicated acute type B aortic dissections require urgent intervention. Our group has previously reported successful treatment of this condition with TEVAR. We report our continued experience, and contrast the technical aspects and outcomes of malperfusion vs. rupture.

Methods: From 2004-2008, 43 patients (60 ± 13 years; 28 men) with an acute complicated type B dissection underwent TEVAR. Indications for treatment were malperfusion - 26 (60%) and rupture - 22 (51%); 5 (11%) presented with both. Renal malperfusion was present in 17 (65%), visceral - 17 (65%), lower extremity - 14 (54%). Patients were followed 1 to 49 months (16 ± 12).

Results: Excellent technical and clinical results were achieved in both groups. Onset of intervention was significantly earlier in patients with rupture (0.6 vs. 1.9 days, p=0.02). Endograft utilization and deployment were comparable, including device number (2.1; 2.2; p=0.94), left SCA coverage (17; 16; p=0.58), and celiac coverage (0; 0). One-year survival was greater than 94% in both groups. While length of stay was longer with malperfusion, neither presentation conferred an inferior outcome (Table). Although TEVAR alone effectively treated aortic rupture in 21 patients (95%), malperfusion was rectified in only 15 (58%) cases. Eleven patients (42%) required adjunctive procedures to restore end-organ perfusion: 50% -lower extremity, 18% - renal, 12% - visceral. No patient suffered limb loss or bowel resection; renal function recovered in 94% of patients with malperfusion.

Conclusions: Malperfusion and rupture complicating acute type B aortic dissection are both successfully managed with TEVAR. However, the endovascular strategy must be customized to each presentation to achieve these results. While TEVAR alone is sufficient to address the aortic disruption in patients with rupture, adjunctive procedures are often necessary in malperfusion cases.

	Malperfusion	*Rupture*	*P value*
ICU stay (days)	5.1 ± 0.8	6.4 ± 0.8	0.98
LOS (days)	19.6 ± 2.5	13.2 ± 1.2	0.04
Blood products (patients)	15/26	9/22	0.59
Stroke (patients)	0/26	1/22	0.93
Spinal ischemia (patients)	2/26	1/22	0.65
30-day mortality (patients)	0/26	1/22	0.93
1-year survival (patients)	21/22	16/17	0.85

Author Disclosures: E.Y. Rakhlin, None; **W.Y. Szeto,** None; **R.M. Fairman,** None; **B.M. Jackson,** None; **G.W. Moser,** None; **E.Y. Woo,** None.

SS10.

Temporary IVC Filters Usually Become Permanent Except When Placed in Trauma Patients for Prophylactic Indications

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Objective(s): The optimal use of retrievable IVC filters remains unclear. We compared our recent 5-year experience with retrievable filters placed for prophylactic or therapeutic indications.

Methods: A retrospective, single institution chart review was performed to identify patients who had a retrievable filter placed between July 2002 and December 2007. Patient data included age, sex, admitting diagnosis, indication for filter, dates of insertion, retrieval/attempted retrieval and reasons for unsuccessful retrieval. Comparisons were made by Chi-square testing.

Results: During the study period, 462 retrievable filters were placed in patients who had a confirmed diagnosis of VTE (or were considered high risk for VTE) who also had an absolute or relative contraindication to anticoagulation. Overall, a retrieval attempt was made in 201 (44%) patients and was successful in 174 (87% of attempts but only 38% of all filters placed) [See table]. Retrieval was much more likely to be attempted in patients who received filters for prophylactic (64%) v therapeutic (28%) indications ($p < 0.0001$). Lack of an attempt to retrieve the filter was due to loss of follow-up (n = 141; no difference between prophylactic or therapeutic groups), contraindication to anticoagulation (n = 75), or patient death (n = 46). Retrieval failure (n = 27) was due to: filter ingrowth (n = 11), retained thrombus (n = 10), or tilt (n = 6). Duration of implantation >30 days was strongly and inversely correlated with retrieval success [<30 day retrieval rate = 92% (131/142), >30 day retrieval rate = 73% (43/59); p = 0.0002].

Conclusions: The only group with a >50% retrieval rate were trauma patients who received prophylactic filters. All other patient groups were more likely to have their filters left in permanently. If attempted, retrieval rates were relatively high regardless of indication or underlying diagnosis although duration of implantation was a significant factor in unsuccessful filter retrieval.

Comparison between Prophylactic & Therapeutic Filters

	Prophylactic (no confirmed VTE)	*Therapeutic (confirmed VTE)*
N [Total = 462] (%)	194 (42)	268 (58)
Attempted Retrieval (%)	125 (64)	76 (28)
Successful Retrieval (% of attempts)	111 (89)	63 (84)
Retrieval Rate (%) by Diagnosis		
Trauma (n = 114/188, 61%)	98/150 (65)	16/38 (42)
Cancer (n = 10/85, 12%)	1/10 (10)	9/75 (12)
Neuro (n = 6/34, 18%)	3/8 (38)	3/26 (12)
Ortho (n = 11/32, 34%)	4/13 (31)	7/19 (37)
Other Med/Surg (n = 33/123, 27%)	5/13 (38)	28/110 (25)

Author Disclosures: P.B. Brant-Zawadzki, None; **F. Akhtar,** None; **M.T. Mueller,** None; **D.V. Kinikini,** None; **L.W. Kraiss,** None; **M.R. Sarfati,** None.

SS11.

Aggressive Lipid-Lowering is More Effective Than Moderate Lipid-Lowering Treatment in Carotid Plaque Stabilization

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Objective: Atherosclerotic plaque stabilization is a promising strategy to prevent cerebrovascular events in patients with moderate carotid stenosis. This prospective study examined whether intensive lipid-lowering therapy is more effective in increasing carotid plaque echogenicity, assessed by Gray-Scale Median (GSM) score, and suppressing serum levels of osteopontin (OPN) and osteoprotegerin (OPG) in patients with carotid stenosis.

Methods: 120 patients (51M/69F), aged 55-75, with carotid stenosis (NASCET: 40-60% for symptomatic and 40-70% for asymptomatic patients), thus without indications for surgical intervention, were included. Patients with previous use of statins were excluded. Patients were randomized to either intensive lipid-lowering therapy (Group A; n=60: target LDL-C<70mg/dl) or moderate lipid-lowering therapy (Group B; n=60: target LDL-C<100mg/dl). The ratio symptomatic/asymptomatic patients